



## Variable spikes in TBE incidence in 2006 independent of variable tick abundance but related to weather

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### Abstract:

**BACKGROUND:** The incidence of tick-borne encephalitis showed a dramatic spike in several countries in Europe in 2006, a year that was unusually cold in winter but unusually warm and dry in summer and autumn. In this study we examine the possible causes of the sudden increase in disease: more abundant infected ticks and/or increased exposure due to human behaviour, both in response to the weather. **METHODS:** For eight countries across Europe, field data on tick abundance for 2005-2007, collected monthly from a total of 41 sites, were analysed in relation to total annual and seasonal TBE incidence and temperature and rainfall conditions. **RESULTS:** The weather in 2006-2007 was exceptional compared with the previous two decades, but neither the very cold start to 2006, nor the very hot period from summer 2006 to late spring 2007 had any consistent impact on tick abundance. Nor was the TBE spike in 2006 related to changes in tick abundance. Countries varied in the degree of TBE spike despite similar weather patterns, and also in the degree to which seasonal variation in TBE incidence matched seasonal tick activity. **CONCLUSION:** The data suggest that the TBE spike was not due to weather-induced variation in tick population dynamics. An alternative explanation, supported by qualitative reports and some data, involves human behavioural responses to weather favourable for outdoor recreational activities, including wild mushroom and berry harvest, differentially influenced by national cultural practices and economic constraints.

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### Resource Description

#### Exposure :

weather or climate related pathway by which climate change affects health

Precipitation, Temperature

#### Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

#### Geographic Location:

# Climate Change and Human Health Literature Portal

resource focuses on specific location

Non-United States

**Non-United States:** Europe

**Health Impact:** 

specification of health effect or disease related to climate change exposure

Infectious Disease

**Infectious Disease:** Vectorborne Disease

**Vectorborne Disease:** Tick-borne Disease

**Tick-borne Disease:** Tick-borne Encephalitis

**Mitigation/Adaptation:** 

mitigation or adaptation strategy is a focus of resource

Adaptation

**Population of Concern:** A focus of content

**Population of Concern:** 

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status

**Resource Type:** 

format or standard characteristic of resource

Research Article

**Timescale:** 

time period studied

Time Scale Unspecified

**Vulnerability/Impact Assessment:** 

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content